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ABSTRACT

Definitions of manageable college student debts are discussed and one definition is applied to California data, using the Student Expenses and Resources Survey. Definitions proposed by Daniere, Hartman, and Horch define manageable debt levels in terms of future income. A comparison of the three proposals shows the number of years of repayment required for accumulated debts of different amounts. For the analysis of California data, a manageable debt limit is defined as the maximum debt that can be repaid within the standard 10-year repayment period. Any debt in excess of $14,000 is designated as excessive, although the present maximum borrowing allowed under the Guaranteed Student Loan (GSL) program is $12,500. The analysis, which is restricted to seniors at four-year public and private colleges, considers average debt size, the distribution of debt size, borrowing patterns, and graduate and professional education debt. The data indicate that at most 3% of seniors with debt might on average experience repayment problems. The situation is most serious for independent students attending private colleges; perhaps as many as 9% of this group have unmanageable debts. However, slightly over half of students borrow and the average accumulated debt is well under half the GSL maximum. (SW)

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Introduction

Heightened concern about rising levels of student indebtedness has prompted the federal government, higher education officials, and the financial aid community to renew their examination of student loans and their impact. Concern about excessive borrowing has grown steadily since federal student aid programs were first initiated in 1958, beginning with the National Defense Student Loan program (currently the National Direct Student Loan program). Inauguration of the Guaranteed Student Loan program in 1965 made available low interest, subsidized loans to thousands of college students. And passage of the Middle Income Student Assistance Act (MISAA) in 1978 propelled the debt issue to the forefront of educational policy by creating opportunities for students, regardless of their financial need, to take advantage of generously subsidized student loans.

MISAA greatly increased the dependence of students and their parents on loans to finance college attendance. It led some observers to wonder whether students could live more frugally or whether their borrowing could be curbed if parents saved more in anticipation of their children's college years. Still others wondered whether students were fully aware of the repayment burden they would face after graduation from college and, if so, whether their career choices might be influenced, if not dictated, by their debt burden. These wonderings leave unanswered two key questions: are students incurring excessive debt?, and if they are, what should be done about it?

Resolution of the issue rests on the unknown interplay between the size and distribution of student debt, educational costs, parental contribution, postcollege earnings prospects, credit conditions, and a definition of "excessive." Equally important are the economic and political forces that shape student loan policy at the federal level. Our particular interest is to clarify the dimensions of student debt and repayment level, and the extent to which student debt can be labeled excessive.

Any attempt to explore these questions is frustrated by inadequate information. Comprehensive descriptive data on accumulated debt liabilities of students focus on current borrowing by the average student rather than on the accumulated debt of graduating students whose repayment period is scheduled to begin shortly after they enter full-time employment. We resolve the data problem by utilizing a comprehensive data base for a single state, in this instance, California.

The most recent and notable example of failure to bring data to bear on student aid issues is the Frank Newman report on higher education policies (Newman, 1985). While facts flow freely through the discussion of PhDs, minority enrollment, freshman attitudes, and other aspects of higher education, little or no data are offered to support the discussion on student aid. From published excerpts (Chronicle of Higher Education, September 18, 1985), Newman asserts that an "excessive" dependence on loans will produce numerous problems. Persistence, career and consumer choices, minority graduation rates, and traditional American values will be adversely affected by the presumed excessive growth of student

loans. Whether Newman's predictions will materialize remains to be seen. Without reliable and comprehensive data, even moderately informed readers will have difficulty understanding whether Newman's pronouncements represent his personal opinions or reflect careful study and analysis.

Others have been more reticient about making pronouncements, expressing the need to obtain data that give a clearer indication of the distribution of student aid. The absence of reliable data has prompted an analogy among student aid scholars that "making student aid policy in the absence of this information has something in common with driving a car blindfolded" (McPherson, 1985).

The plethora of recent reports on the state of American higher education has been strangely silent on student aid issues. The authors of these reports have been more concerned with the substance of higher education. Perhaps they take as given the principal objective of student aid in providing opportunity for all persons who lack the financial resources but have the intellectual capacity to attend college. Yet these two topics are intimately related. This suggests that the absence of factual support for Newman's conclusions about student aid may ensure that his potentially influential document will be largely ignored on student aid issues. It also suggests that his recommendations in other areas of higher education may be substantially undermined if students do not have adequate resources to attend college in the first place.

The Guaranteed Student Loan (GSL) Program

A few details about the GSL program may be useful before we proceed. GSLs are a primary source of student aid. These low interest and generously subsidized loans permit nearly all students with family incomes below $30,000 to borrow, without a needs test, up to $12,500 during the course of their college education; no more than the $2,500 can be borrowed in any single year. For students with family incomes of $30,000 or more, a needs analysis test is required; however, students are still eligible to borrow up to the maximum if they qualify.

The standard repayment period is ten years except for loans that are less than the maximum. Thus, a GSL loan of $1,000 at 8 percent interest would be repaid in about two years, in part because a minimum monthly repayment of $50 is required. Payment of the interest subsidies--the difference between the market rate of interest and the student repayment rate, as well as the cost of deferring interest charges until repayment begins six months after the completion of school--is made by the Federal Government to banks which provide these loans.

Defining Manageable Debt

The question about what constitutes manageable debt continues to perplex student aid officials and administrators. While the private sector has evolved a set of practices governing the granting of consumer loans, government loan programs and those who think about them have not had a similarly firm anchor.

The consumer loan industry has had for some time well-established guidelines for estimating manageable loan limits. The generally prevailing rule is that acceptable debt should not exceed approximately 30 percent of monthly gross income. Based on an average starting salary of $20,000 for a new college graduate, a manageable consumer loan could be as great as $6,000. Using a typical three-year repayment period and a 14 percent borrowing rate, we find that the annual repayment level is $2,460 or 12 percent of salary. Stretching out the repayment to four years reduces the dollar amount to $1,970 and the repayment rate to 10 percent of salary.

The situation for student borrowing is less clearcut because student loans are so heavily subsidized and no marked imperative is at work. Nonetheless, financial aid scholars and experts have attempted to define manageable debt limits. Although there is no consensus about manageable debt limits, most authors define acceptable debt size in relation to annual repayments, expressing them as a percentage of annual salary. Since student borrowers do not have a significant annual income when they incur their education debt, repayment levels are expressed in relation to expected earnings during the period of repayment after they complete their schooling.

Daniere (1969) suggests a loan plan that would permit borrowing up to 6.4 percent of pretax income and 7.5 percent of posttax income.[1] Posttax income is defined as "residual income" which is income after taxes minus consumption expenditures. Consumption expenditures represent about 90 percent of family after tax income

according to Bureau of Labor Statistics (BLS) estimates. Part of the residual income should be reservered for contingencies, which leaves about three-quarters of after-tax residual income (which is 10 percent of total after-tax income) for loan repayment. This works out to 6.4 percent of before-tax income. Thus we take 6.4 percent of before-tax income as representing Daniere's measure of an average acceptable repayment rate.[2]

Hartman (1971) defines a tolerable debt level as one that could be retired with up to 15 percent of a college graduate's starting salary over a 10 year repayment period.[3] Hartman bases his estimate on the willingness of college graduates age 25-34 to accept repayment levels equal to the increment in their income attributable to higher education (the difference between the earnings of high school and college graduates). His plan would permit borrowing as much as $21,000 at an 8 percent interest rate, assuming a starting salary of $20,000.

Horch (1978, 1984) differentiates among graduates with different starting salary levels, indicating that manageable debt assumes that students entering high paying fields could allocate 12 percent of their future after-tax income to loan retirement as contrasted to 5 percent for those entering low paying fields. Horch's measures are based on the "other consumption" component of the BLS Consumption Budget Stardards from 1967, updated to 1983 by the Consumer Price Index.

What could appear to be excessive debt among entrants into fields with low starting salaries might turn out not to be excessive if salaries increase rapidly with each additional year of

experience. Thus, manageable debt varies with both starting salary levels and the subsequent rate of increase on salaries. Wabick and Goggin (1981), in a variation on Horch's approach, try to take this into account by converting median debt levels into repayment levels and then measuring these repayments as a percentage of discretionary income, based on median income profiles for different occupational groups.

All of these attempts to define manageable debt levels argue that debt should be viewed in relation to future income. This means that the relevant measure of burden should be total debt to (expected) salary rather than repayment levels to salary. Of course in counseling students on the implications of their borrowing, the repayment to salary rate is of obvious importance.

It must be recognized that the repayment burden, whether excessive or not, can be reduced in the early years by making repayments a constant fraction of salary levels. This means that as salaries rise, repayments rise at the same rate. This approach permits the initial absolute level of repayments to be reduced, with offsetting higher payments later on. Another approach is to develop a graduated repayment schedule, which simply means that repayment levels start out at low levels and then rise, perhaps progressively with respect to salary levels (Johnstone, 1972).

At least one expert disagrees sharply with the prevailing majority. Dresch (1983) does not recognize a debt as a function of income but argues that a tolerable debt level is one that can be repaid within 30 years, provided that students do not borrow more than the total costs of the education they acquire. This

conveniently sidesteps the discussion of what is manageable, and implicity it presumes an effective mechanism for ensuring repayment of the much larger volumes of loans that such an approach would permit.

Before proceding, the Daniere, Hartman, and Horch proposals deserve comment. The Daniere and Horch approaches appear to be closely related, with Daniere using an average figure and Horch using separate figures for different income levels. Both implicitly assume that debt repayments should in no way (or only minimally in the case of Daniere) affect prevailing consumption patterns. This represents one extreme. The other extreme is represented by Hartman who in effect says that college graduates should live at the same income standard as high school graduates during the period of debt repayment. In view of this characterization of the two principal proposals (Daniere and Hartman), we opt for a compromise which amounts to averaging the two proposals.

A comparison of the implications of the proposals of Daniere, Hartman, and the compromise is provided in Table 1. The characteristics of the proposals are presented in columns 1-3. The implications for manageable debt levels are developed in the remaining columns where we show the number of years of repayment required for accumulated debts of several different levels. This framework facilitates our definition of manageable debt limits, which we define as the maximum debt that can be repaid within the standard 10-year repayment period that applies to federal student loan programs.

Table 1

Comparison of Manageable Debt Levels and Repayments
as Well as the Time Period Required to Repay Debts of Different Amounts
Based on an Eight Percent Interest Rate

Proposal Author	Manageable Percent of Salary Reserved for Repayment	Average Starting Salary (assumed)	Manageable Annual Repayment	Outstanding Debt and Years Required to Repay Based on Manageable Annual Repayment Levels[1]					Upper Limit of Manageable Debt[2]
	(1)	(2)	(3)	(4)					(5)
				$4,000	$6,000	$8,000	$10,000	$15,000	
Daniere	6.4 percent after-tax salary	$20,000	$1,280	3-4	6	9	12	25	$9,000
Hartman	15 percent before-tax salary	$20,000	$3,000	1	2-3	3	4	6	$21,000
Compromise	10.7 percent before-tax salary[3]	$20,000	$2,140	2	3	4-5	6	11	$14,000

[1]Time repayment period based on an 8 percent interest rate.

[2]Unmanageable debt is that which cannot be repaid within a 10-year period, the standard maximum period for repayment of student loans.

[3]Based on average Daniere and Hartman proposals.

Source: SEARS data tape.

Using this definition, we find that excessive debt levels range from a high of $21,000 for the Hartman proposal to $9,000 for the Daniere proposal. Our compromise proposal is simply an average of the Daniere and Hartman proposals, namely, $14,000.

For contrast, we can inquire what would be an unmanageable debt level if students had to borrow in the unsubsidized commercial sector. The maximum debt level would have to be somewhat smaller, not only because annual borrowing from private lenders would require that interest payments commence immediately after the loan is taken out but also because, once repayment begins, there is no subsidy for the interest charges, i.e., the market rate of interest is charged.

We can determine at what level accumulated debt becomes excessive using the same framework as in Table 1. Assume that accumulated debt cannot exceed 30 percent of starting salary, which we take to be about $20,000. We then make the following assumptions: (1) borrowing occurs in equal amounts at the start of each academic year; (2) repayment is deferred for 6 months after graduation, implying a four and one-half-year deferred repayment for the initial freshman loan; (3) interest charges on debt are 14 percent; and (4) interest charges begin as soon as the loan is taken out. In this situation the accumulated debt (reflecting the inclusion of interest charges while in school) is greater than the sum of the amounts borrowed; by the time repayment begins; in fact, it will be about 50 percent more. Applying the 30 percent debt/income rule (accumulated debt cannot equal more than 30 percent of a $20,000 annual salary), the amount borrowed cannot

exceed $4,000 ([.3 x $20,000] x [4.00 ÷ 6.01] = $4,000). This is $2,000 below the GSL maximum. Thus, federal subsidies for Guaranteed Student Loans increase by a considerable margin the amount that students can borrow while paying the same repayment rate that a commercial loan would necessitate.

Data and Methods

The analysis of debt levels is based on data for postsecondary students in the state of California. Every several years the California Scholarship Commission undertakes a comprehensive survey, the Student Expenses and Resources Survey (SEARS). The target population is students in the various segments of post-secondary education throughout the state, including universities, four-year and two-year institutions, and vocational and technical institutions. The students are enrolled in public, private, and proprietary institutions. The 1982-83 survey universe included 568,000 students, of whom 66,000 were surveyed. Responses came from 23,000, a 35 percent response rate. The results presented here are based on weighted data from the SEARS study (California Scholarship Commission, 1985).

The data for California appear to be representative of the United States population (Hansen & Reeves, 1985). At the same time it should be recognized that the absolute dollar values are likely to be somewhat higher than national values because of the generally higher levels of prices and incomes for Californians (Statistical Abstract of the United States, 1985, p. 440); however, these differences should disappear as we compare debt/income relation-

ships or repayment/income rates. In addition, salaries may be growing more rapidly in California than elsewhere, with the result that debt burdens will prove to be less serious than they would appear in data for a single year.

We draw on a variety of data obtained from this survey, including total accumulated debt, parental income, student income in the case of independent students, student costs of education, and other characteristics of college seniors. For purposes of this study, we concentrate on seniors because they have accumulated the full extent of their debts as undergraduates. To simplify the analysis, we analyze data for seniors at four-year institutions. These institutions include private colleges and universities as well as public institutions in the University of California and the California State University systems.

Average Debt Size

The California data indicate that the overall percentage of full-time college seniors with accumulated debt is about 59 percent. The percentages vary somewhat for different population groups. By status, 67 percent of independents have some debt, while 51 percent of dependents have incurred debt. By type of institution, 67 percent of students at private institutions have incurred debt as contrasted to 51 percent of students at public institutions. All of these rates fall within the 51-67 percent range.

The average accumulated debt for college seniors in four-year institutions proves to be surprisingly small and hardly excessive

in view of the costs of completing a college degree. Average accumulated debt for those with debt amounted to $4,900 (column 1, line 1, Table 2). When this is contrasted with average costs over four years of approximately $34,300 (column 2), accumulated debt is about 14 percent of total costs (column 3).

The results look only slightly different when we separate students who attend public and private institutions (lines 2 and 3). Not unexpectedly, average total debt is greater for seniors at private than at public institutions, $6,800 versus $4,000. Average total costs at private colleges are also higher, $44,000 compared to $25,000 at public institutions. This is due largely to substantially higher average tuition at private institutions. Yet total debt as a percent of total costs is virtually identical for dependent students in public and private institutions (15 and 16 percent, respectively).

Average total debt for independent students is considerably higher, as are average total costs. However, debt as a percent of costs is slightly lower (13 to 14 percent) for independent as compared to dependent students. At the same time it is important to recognize that the higher average level of debt means that unless starting salaries are higher for independent students, their repayment burden out of expected salary will be greater than for dependent students. To the extent that independent students are somewhat older and may, because of age related considerations, command somewhat higher starting salaries, the repayment burden is unlikely to be appreciably greater for them.

Table 2

Average Total Debt, Average Total Education Costs, and Accumulated Debt as a Percentage of Total Education Costs, for Full-Time College Seniors with Debt: California, 1982-83

Type of Student Borrowers	Average Total Debt* (1)	Average Total Education Costs** (2)	Debt as a Percent of Total Education Costs (3)
Dependent Students			
1. All 4-Year Institutions	$4,900	$34,300	14
2. Public 4-Year Institutions	4,000	25,000	16
3. Private 4-Year Institutions	6,800	44,000	15
Independent Students			
1. All 4-Year Institutions	4,500	46,000	12
2. Public 4-Year Institutions	4,900	36,700	13
3. Private 4-Year Institutions	8,100	56,500	14

Notes: *Average total debt is accumulated educational debt from previous and current years while student was in college.
**Average total cost includes cost of books and supplies, housing, food, and transportation, vehicle payments (i.e., insurance and repairs), child care, and miscellaneous items. Average total costs were multiplied by 4, and then 4 years of estimated tuition and fees were added.

Source: Calculated from SEARS data tape.

Distribution of Debt Size

While information on average debt size is useful in providing an overall assessment of the debt burden problem, it is even more important to know the distribution of debt size. If all seniors had approximately similar size debts, the dollar repayment burden would be equal for all borrowers. But if debt is concentrated, i.e., one group of students has relatively large debts and another group has relatively small debts, the overall averages are less useful. For this reason, we show in Table 3 the percentage distribution of debt size for dependent and independent seniors at both public and private four-year institutions.

The results indicate that on average 12 percent of all students have accumulated debts of $10,000 or more, with a somewhat higher percentage for independent than for dependent students (13 percent compared to 10 percent). Among both independent and dependent students who attend private institutions, independent students had accumulated higher levels of debt of $10,000 or more (38 percent compared to 21 percent). However, among dependents and independents in public institutions, the percentages with these larger debts are quite similar (8 percent for dependents and 9 percent for independents).

Borrowing Patterns

It is clear that heavy borrowing is concentrated among a relatively small proportion of students in each category, public/private and dependent/independent. Thus, it is instructive to examine the process by which debt accumulates. This can be done

Table 3

Cumulative Percentage Distribution of Accumulated Debt
for Full-Time College Seniors in Public and Private Institutions
by Dependent Status: California, 1982-83

	Dependent			Independent		
Debt Size	Public	Private	Total	Public	Private	Total
$16,000 +	1	2	1	1	7	2
$14,000 +	4	7	3	2	11	3
$12,000 +	5	13	5	5	25	8
$10,000 +	8	21	10	9	38	13
$ 8,000 +	13	34	17	16	45	20
$ 6,000 +	24	56	29	30	59	34
$ 4,000 +	42	74	47	52	77	56
$ 2,000 +	74	89	73	76	95	79
$ 1 +	100	100	100	100	100	100

Notes: Total Dependents = 46,800 (weighted)
Total Independents = 25,835 (weighted)

Source: Calculated from SEARS data tape.

by looking at data showing current year borrowing combined with accumulated debt from previous years.

As the data for dependent students in public institutions illustrate, relatively few students borrow more than $2,000 per year (8 percent of freshman, 4 percent of sophomores, 8 percent of juniors, and 6 percent of seniors); at least this was the case in 1982-83. The comparable figures for dependent students in private institutions are higher--31, 28, 11, and 12 percent. These patterns, particularly for private school students, go against the usual patterns which show higher rates of borrowing among juniors and seniors. However, an examination of accumulated debt reveals a steady rise by class level. To highlight the rate at which debt accumulates, we measure the percentage of students against a rising benchmark of $2,000 more debt per year. Thus, we find 7 percent of freshman with debts of $2,000 or more, 35 percent of sophomores with debts of $4,000 or more, but only 11 percent of juniors with debts of $6,000 or more, and 6 percent of seniors with debts of $8,000 or more.

These figures may be biased on two counts. One is because students with heavy debts might have already dropped out and thereby reduced the averages for juniors and seniors. Another is the possibility that borrowing suddenly accelerated among sophomores, reflecting their experience over the 1981-82 and 1982-83 academic years. This was a period of significant expansion in loans, triggered in part by the advantageous terms on which GSL loans were made at the time.

Is Debt Excessive?

We can now answer this question by combining the results of Tables 1 and 3. The upper limit of manageable debt levels for seniors ranges from $9,000 to $21,000, based on the Daniere and Hartman results in the top two lines of Table 1 (see right-hand column). The compromise proposal sets the limit at $14,000. If we accept the higher of these two figures ($21,000), we derive from Table 3 that among dependent students none of them had excessive debt levels. The same is true for independent students. If instead we opt for the lower figure ($9,000) from Table 1, we find that the proportion of students with unmanageable debt levels ranges from roughly 10 percent (an average of 8 and 13 percent for public/dependent students) to about 40 percent (an average of 38 and 45 percent for private/independent students).

By contrast, the compromise proposal indicates that about 3 percent for both dependent and independent students have accumulated debt that exceeds the manageable debt level. The percentage is somewhat higher (about 11 percent) for private/independent students.

We conclude from this exercise that at most 3 percent of all college seniors with debt have excessive debt by the compromise standard. This result would appear to give little cause for the mounting concern about excessive debt levels among undergraduate students.

Graduate and Professional Educational Debt

One reason for the heightened concern about rising student debt levels is the possibility that some students wanting to pursue post-baccalaurate degrees may be inhibited by the prospect of taking out additional loans on top of substantial debt accumulated during their undergraduate careers. Evaluating the reasonableness of this concern requires knowing several things. This includes the percentage of undergraduates who borrow and who amass substantial debt, the percentage of BA degree holders going on for advanced education, the percentage of graduate students who borrow, and the correlation between accumulated debts and the need for additional borrowing. It appears that approximately 25 percent of BA recipients go on for some form of advanced educational work. Inasmuch as about 60 percent of seniors have accumulated debt during their college years, but less than 12 percent of them have substantial debts of $10,000 or more, the likelihood that students entering graduate school will have substantial debt is quite small, roughly, 12 x 0.25 = 3 percent.

The Hartle and Wabick studies (1983) shed some light on the debts of students enrolled in graduate programs. Roughly a quarter of these students incur debt, with debts averaging $2,500 to $3,900 at the masters levels and $4,000 to $5,000 at the doctorate level. The percentage with substantial debt (i.e., $10,000 or more) is, we would guess, perhaps in the neighborhood of 10 percent.

The likelihood that large numbers of undergraduate students will emerge with high debt levels because of substantial borrowing

at both the graudate and undergraduate levels can be measured as follows:

$$P_{U_G} = P_{U_{HU}} \times \text{Cont} \times P_{U_{HG}}$$

where P_{U_G} is the percentage of undergraduates who will amass substantial debt, as both undergraduate and graduate students;

$P_{U_{HU}}$ is the fraction of undergraduates who will add substantial debt as undergraduates;

Cont is the fraction of undergraduates continuing into postgraduate study; and

$P_{G_{HG}}$ is the fraction of graduate students who will add substantial debt as graduate students.

Inserting the values already provided, we find that the likelihood that undergraduates with high debt will be deeply into debt as graduate students is on the order of 0.3 percent (12 x 0.25 x .10 = 0.3). This estimate is hardly large enough to make the problem a matter of national concern. By Hartman's standard a $20,000 debt could be repaid with the 10-year time span at the 15 percent repayment rate.

Why Don't Students Borrow More?

The average level of debt among undergraduate senior borrowers is well below what might be termed the unmanageable level, and the number of students with unmanageable debt levels is quite small. This causes us to wonder why it is that students don't borrow more than they do.

Several explanations come to mind about why students do not borrow more heavily. One is that students generally don't like to

be encumbered with the prospect of having to repay student loans. There are too many uncertainites about their early careers and salary prospects and their expected expenditures (including houses, autos, and other durable goods). Second, to the extent that students feel this way they may prefer work in order to augment their resources and thus meet their college expenses. And, finally, there may be a general aversion in the population to borrowing for intangibles such as education.

We have no way of deciding how much weight to assign to each of these speculations; no doubt all of them help to account for the low levels of accumulated debt.

Conclusions

Our efforts to define the meaning of manageable student debts and our application of this definition to the California data indicate that at most 3 percent of seniors with debt might on average experience repayment problems. This is based on accumulated debts which exceed $14,000, an amount somewhat larger than the present $12,500 maximum borrowing allowed under the GSL program. The situation is most serious for independent students attending private institutions; perhaps as many as 9 percent of this group have unmanageable debts. Nonetheless, the seriousness of the excessive debt problem appears to have been exaggerated by frequent discussions and the occasional horror story about a student with exceptionally large debts. What most surprised us is how little students borrow on average in light of the considerable costs of completing a four-year degree program--just over half

borrow and the average accumulated debt is well under half the GSL maximum.

We are also struck by the evidence (not presented here) that average accumulated debt is fairly uniform across family (parental) income levels except at the lower income brackets (under $24,000) where debt levels are somewhat higher. This means that the generous subsidies accompanying GSL loans go to substantial numbers of students from families with incomes large enough not to require loans to finance college attendance. The fact is that the subsidies resulting from charging reduced interest rates amd deferring interest charges until after the completion of school are significant. Whether these subsidies are warranted is a subject of continuing debate.

Notes

1. Horch discusses Daniere's model to include both 6.4 and 7.5 percent of income: upon examination of Daniere's original paper, we could not find reference to the 6.4 percent before-tax discussion. Nonetheless, we use the 6.4 percent before-tax figure because of its comparability with the before-tax estimate of Hartman.
2. Daniere's estimates were developed in a period of much lower interest rates. Whether he would modify his figure in light of present or recent interest rates is not known.
3. The same point made about Daniere also applies to Hartman.

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